

### **REMARKS**

Applicant thanks the Examiner for the remarks and analysis contained in the Office Action. Claims 1, 7, 10, 16 and 17 have been amended to clarify the language of the claims in view of the objection raised by the Examiner. New claims 21-24 are added. Claims 1-24 are currently pending in this application. Applicant respectfully requests reconsideration of the application.

Claims 1, 7, 8, 12, 16, 19 and 20 were rejected under 35 U.S.C. §102(b) as being unpatentable in view of U.S. Patent No. 5,195,046 to *Gerardi, et al.* Applicant respectfully traverses the rejection. *Gerardi, et al.* does not show a piezoelectric sensor in series with a resistive element. The arrangement shown in Figure 3, for example, has a PVDF layer 38 and low resistance contacts 40 and 42, which are metalization layers deposited or etched onto the PVDF layer 38. The layers 40 and 42 are not separate resistive elements in series with a sensor. The layer 38 is not a sensor. The entire arrangement shown in Figure 3 constitutes the “single sensor 18A suitable for use as a dynamic strain sensor or feedback transducer.” It is an improper reading of the *Gerardi, et al.* reference to construe the elements in Figure 3 as a separate sensor and separate resistive elements. The layer 38, by itself, does not constitute a sensor because it is inoperative by itself and not capable of performing any intended function without the layers 40 and 42. Accordingly, there is no anticipation of any of the claims.

Figure 1 of the *Gerardi, et al.* reference shows sensors directly connected to the amplifiers and filters 24 without any resistive element in series with the sensor. Instead, the *Gerardi, et al.* reference teaches a direct coupling between the sensor and the processing circuitry 24, etc.

Additionally, the *Gerardi, et al.* reference does not teach an arrangement having a transmitter that communicates with a remotely located interface or processor. At best, the *Gerardi, et al.* reference teaches an arrangement with “sensor modules 112” that communicate with a central onboard computer “over a digital signal bus 140 as illustrated in Figs. 8, 9. Bus 140 illustratively includes lines for power, power ground, serial-in communication, serial-out communication, serial ground, as well as a reset line and an address line.” As such, the *Gerardi, et al.* reference teaches a communication bus arrangement for hardwire connection between sensor modules 112.

As such, the *Gerardi, et al.* reference fails to teach the arrangement of the claims rejected under 35 U.S.C. §102. Applicant respectfully traverses the rejections under §103 because even if *Gerardi, et al.* were modified as suggested by the Examiner, the result would not be the same as the claimed arrangement. The proposed modifications to the *Gerardi, et al.* reference suggested by the Examiner do not remedy the defects pointed out above.

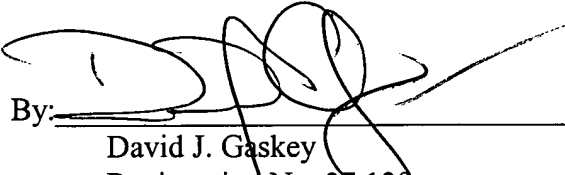
An Information Disclosure Statement is enclosed for the Examiner’s consideration. Applicant respectfully requests that those items be considered by the Examiner and made of record in this application.

Applicant believes that additional fees in the amount of \$72.00 is required for four claims in excess of twenty. A check in the amount of \$72.00 is enclosed. The Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds for any additional fees or credit the account for any overpayment.

Applicant respectfully submits that this case is in condition for allowance. If the Examiner believes that a telephone conference will facilitate moving this case forward to being issued, Applicant's representative can be contacted at the telephone number indicated below.

Respectfully submitted,

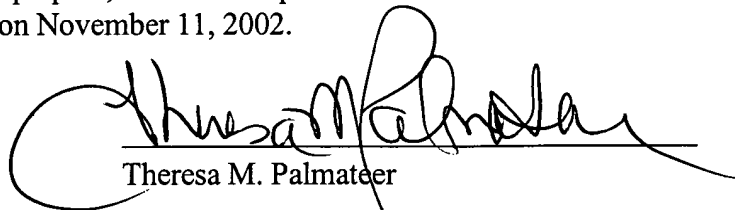
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Dated: November 11, 2002

**CERTIFICATE OF MAILING**

I hereby certify that the enclosed Response is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Assistant Commissioner of Patents, Washington D.C. 20231 on November 11, 2002.

  
Theresa M. Palmateer

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**APPENDIX 1****“VERSION WITH MARKINGS TO SHOW CHANGES MADE”  
IN THE CLAIMS**

1. (Amended) A system for determining a structural condition of an item, comprising:
  - a piezoelectric sensor that is adapted to be supported on the item;
  - a resistive element coupled in series with the piezoelectric sensor;
  - a signal conditioner that conditions a signal including an indication of a voltage drop across the sensor;
  - a transmitter that transmits the processed signal; and
  - a remotely located interface that receives the transmitted signal and provides an output indicative of an impedance [of] based upon the processed signal and the structural condition of the item.
  
7. (Amended) The system of claim 1, wherein the interface includes a portion that determines a mechanical impedance value [of] based upon the processed signal and determines an indication of the structural condition from the impedance value.
  
10. (Amended) The system of claim 1, including a differentiating portion that differentiates an impedance value [of] based upon the transmitted signal over time and wherein the interface synchronizes data acquisition from the transmitted signal with at least one selected value of the voltage generator.

16. (Amended) The method of claim 12, wherein step (D) includes determining an impedance value [of] ~~based upon~~ the transmitted signal using the indication of the voltage drop and using the impedance value to determine the structural condition.

17. (Amended) The method of claim 12, including applying a voltage with a varying frequency across the resistive element and the sensor and differentiating an [the] impedance value [of] ~~based upon~~ the transmitted signal over time to thereby determine synchronization indicators and using the indicators to synchronize data acquisition from the transmitted signal with the varying voltage.